

## CLAIMS

1. An apatite particle represented by a molecular formula  
 $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$ , where  $x = 1, 2, \dots, 9$ , or by a chemical formula  
 $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$ , where  $x = 1, 2, \dots, 7$ , with the particle size being 30 nm to  
5 2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.
2. A method of producing an apatite particle represented by a molecular  
formula  $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$ , where  $x = 1, 2, \dots, 9$ , or by a chemical  
formula  $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$ , where  $x = 1, 2, \dots, 7$ , with the particle size being  
30 nm to 2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm  
10 to 300 nm, by incubating a solution containing inorganic phosphoric acid,  
calcium ions and magnesium ions for a predetermined time.
3. An apatite particle- gene complex in which a specified gene is combined  
with an apatite particle which is represented by a molecular formula  
 $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$ , where  $x = 1, 2, \dots, 9$ , or by a chemical formula  
15  $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$ , where  $x = 1, 2, \dots, 7$ , with the particle size being 30 nm to  
2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.
4. A method of transfecting a preset gene into a specified cell by incubating,  
with said specified cell, an apatite particle- gene complex in which a preset  
gene is combined with an apatite particle represented by a molecular formula  
20  $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$ , where  $x = 1, 2, \dots, 9$ , or by a chemical formula  
 $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$ , where  $x = 1, 2, \dots, 7$ , with the particle size being 30 nm to  
2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.